From Mastitis to Metastasis: Inflammatory Breast Carcinoma Masquerading as Mastitis — A Diagnostic Challenge

Abstract

Inflammatory breast carcinoma (IBC) is a rare and highly aggressive variant of breast cancer that often mimics benign inflammatory breast conditions, resulting in delayed diagnosis and poor outcomes.

We report a case of a 35-year-old woman who presented with clinical features suggestive of mastitis of the left breast.

Initial clinical assessment and imaging favored a benign inflammatory etiology; however, persistence and progression of symptoms prompted further evaluation.

Sequential imaging, cytological assessment, histopathological examination, and metastatic work-up ultimately confirmed inflammatory carcinoma of the breast with extensive distant metastases.

This case underscores the diagnostic challenges associated with Inflammatory Breast Carcinoma (IBC) and highlights the importance of maintaining a high index of suspicion in patients presenting with non-resolving inflammatory breast conditions.

Keywords: Inflammatory breast carcinoma; Mastitis; Dermal lymphatic invasion; Metastatic breast cancer

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Introduction

Inflammatory breast carcinoma (IBC) is an uncommon and aggressive form of breast cancer, accounting for approximately 1–5% of all breast malignancies.

It is characterized clinically by rapid onset of erythema, edema, warmth, and peaud'orange, resulting from obstruction of dermal lymphatics by tumor emboli.

Due to its close clinical resemblance to mastitis or cellulitis—particularly in younger women—IBC is frequently misdiagnosed, leading to delay in diagnosis and initiation of treatment.

Given its aggressive biology, high metastatic potential, and poor prognosis, early recognition and prompt multimodality management are essential for improving outcomes.

Case Presentation

A 35-year-old woman presented with swelling of the left breast of two months duration, associated with redness, pain, and a sensation of heaviness involving the left breast.

The symptoms were sudden in onset and rapidly progressive, initially localized but later involving the whole breast.

The patient had stopped lactation 4-5mnths ago

There was no history of breast trauma or nipple discharge.

The patient also reported cough with expectoration for 15 days prior to presentation.

There was no response to conservative or symptomatic treatment, raising suspicion of an alternative diagnosis.

Past Medical History

The patient was not a known case of hypertension, diabetes mellitus, tuberculosis, chronic respiratory disease, or cardiac illness.

She had a significant past history of a road traffic accident 10 months earlier, following fall from bike, resulting in a fronto-temporo-parietal subdural hematoma with mass effect and midline shift.

She underwent surgical evacuation with cranial flap placement in the abdomen, followed by tracheostomy.

The cranial flap was replaced after three months. At the time of presentation, she was conscious and oriented, with residual forgetfulness.

Family history: No history of breast malignancy or similar complaints in first-degree relatives

Menstrual and Obstetric History

- Menarche at 13 years
- Regular menstrual cycles with 5–7 days of flow
- Married at 20 years
- First childbirth at 22 years
- No history of oral contraceptive pill use

Clinical Examination

With informed consent, breast examination was performed in the sitting position with exposure from neck to waist, following standard inspection and palpation protocols.

Inspection

Compared to the right breast, the left breast was diffusely enlarged, with the nipple–areola complex positioned at a higher level.

Skin findings (left breast):

- Diffuse erythema involving the entire breast
- Peaud'orange involving whole of the breast
- No visible dilated veins
- No localized fullness in any of the quadrants of the breast
- No ulceration

Nipple findings:

- Retraction of the nipple
- No nipple discharge

No visible swelling was noted in the axillary or supraclavicular regions.

Palpation

- Local rise of temperature present
- Diffuse tenderness
- Diffuse induration involving almost the entire breast
- No discrete palpable lump
- Overlying skin not pinchable, suggestive of skin fixation
- No definite fixity to the pectoralis major muscle

Lymph Node Examination

No clinically palpable axillary lymphadenopathy was detected on systematic examination.

Examination of Contralateral Breast and Axilla

Normal.

Systemic Examination

- **Central nervous system:** Conscious, oriented, with residual forgetfulness from the RTA
- **Cardiovascular system:** Normal S1 and S2
- **Respiratory system:** Bilateral air entry present; reduced air entry on the right side with bilateral basal crepitations; increased vocal fremitus and vocal resonance in the mid-scapular region
- **Abdomen:** Soft, Non-tender, no organomegaly
- **Musculoskeletal system:** Tenderness noted along the thoracic and lumbar spine.

Imaging Findings

Initial ultrasonography of the breasts revealed diffuse hyperechogenicity of the subcutaneous tissue of the left breast with underlying edema and a cobblestone appearance, suggestive of mastitis

No focal collection or abscess was identified.

A repeat ultrasound after 15days demonstrated diffuse subcutaneous edema predominantly involving the upper outer quadrant, multiple dilated lactiferous ducts, and increased echogenicity of the breast parenchyma, interpreted as mastitis.

Subcentimetric bilateral axillary lymph nodes were noted, with the largest measuring approximately 10 mm in short-axis diameter.

Cytological Evaluation

Fine-needle aspiration cytology from the left breast showed:

Ductal epithelial cells arranged singly and in loose cohesive clusters, with mild anisonucleosis and occasional nucleoli in a hemorrhagic background.

In view of the suspicious cytological features, a trucut/incisional biopsy was advised.

Histopathological Findings

Incisional biopsy showed unremarkable epidermis.

The deeper dermis revealed nests of pleomorphic tumor cells with increased nuclear-to-cytoplasmic ratio and hyperchromatic nuclei.

Numerous dilated dermal lymphatic channels containing tumor emboli were identified.

Perineural and vascular invasion were present, with tumor infiltration extending up to the muscular layer.

Histopathological Diagnosis:
Infiltrating ductal carcinoma with dermal lymphatic, vascular, and perineural invasion —consistent with inflammatory breast carcinoma.

Staging and Metastatic Work-up

Contrast-enhanced computed tomography (CT) of the thorax, abdomen, and pelvis revealed:

- Diffuse skin thickening with inflammatory changes of the left breast
- Multiple ill-defined hypodense lesions in both lobes of the liver (segments V, VII, VIII, and IVb), largest measuring 3.4 × 5.5 cm, in segment VII/VIII suggestive of metastases
- Multiple irregular lytic lesions involving the axial and appendicular skeleton, consistent with extensive skeletal metastases
- Grade I wedge compression fracture of the D3 vertebra
- Loculated right-sided pleural effusion with adjacent consolidation
- Minimal left pleural effusion
- Interlobular septal thickening suggestive of lymphangitiscarcinomatosis
- Subcentimetricmediastinal and left axillary lymph nodes

Pleural fluid cytology revealed malignant cells, confirming metastatic disease.

Final Diagnosis

Inflammatory carcinoma of the left breast (infiltrating ductal carcinoma) with dermal lymphatic invasion and distant metastases to liver, bone, and pleura (Stage IV disease).

Discussion

Inflammatory breast carcinoma is a clinicopathological diagnosis defined by rapid progression and characteristic inflammatory skin changes secondary to dermal lymphatic obstruction by tumor emboli.

This case illustrates the diagnostic dilemma posed by IBC, as early clinical and imaging findings closely mimicked mastitis.

The lack of response to conservative therapy and persistence of symptoms necessitated tissue diagnosis, which proved decisive.

The young age of the patient, aggressive histopathological features, early dermal lymphatic invasion, and widespread metastatic disease at presentation highlight the aggressive biological behavior of IBC.

Imaging findings may be nonspecific in the early stages, underscoring the importance of early biopsy in atypical or refractory inflammatory breast conditions.

Conclusion

Inflammatory breast carcinoma should be strongly suspected in patients presenting with non-resolving inflammatory changes of the breast, even in younger and non-lactating women.

Early biopsy, timely staging, and prompt initiation of appropriate therapy are essential to avoid diagnostic delay and improve outcomes.

This case reinforces the need for heightened clinical vigilance and an aggressive diagnostic approach in presumed mastitis that fails to resolve.

Patient Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images, with assurance of anonymity.


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CT scan

Multiple irregular lytic lesions involving the axial skeleton, consistent with extensive skeletal metastases.

Grade I wedge compression fracture of the D3 vertebra.

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